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	(Only for new nonprovisional applications under 37 CFR 1.53(b))	Inventor(s) or Application Identifier Masao AKIMOTO and Kyoji SAITO			
		Title: ERROR INFORMING APPARATUS AND ERROR INFORMING METHOD			

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APPLICATION ELEMENTS	**ACCOMPANYING APPLICATION PARTS**
1. ☒ Fee Transmittal Form	8. ☒ Assignment Papers (cover sheet & document(s))
2. ☒ Specification [Total Pages __23__] (preferred arrangement set forth below) - Descriptive title of the Invention - Cross References to Related Applications - Statement Regarding Fed sponsored R & D - Reference to Microfiche Appendix - Background of the Invention - Brief Summary of the Invention - Brief Description of the Drawings (if filed) - Detailed Description - Claim(s) - Abstract of the Disclosure	9. ☐ 37 CFR 3.73(b) Statement ☐ Power of Attorney (when there is an assignee) 10. ☐ English Translation Document (if applicable) 11. ☐ Information Disclosure ☐ Copies of IDS Citations Statement (IDS)/PTO-1449 12. ☐ Preliminary Amendment
3. ☒ Drawing(s) (35 USC 113) [Total Sheets __8__]	13. ☒ Return Receipt Postcard (MPEP 503) (Should be specifically itemized)
4. ☒ Oath or Declaration [Total Pages __3__] a. ☒ Newly executed (original or copy) ☐ Unexecuted b. ☐ Copy from a prior application (37 CFR 1.63(d)) (for continuation/divisional with Box 18 completed) **[Note Box 5 below]** i. ☐ DELETION OF INVENTOR(S) Signed statement attached deleting inventor(s) named in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b).	14. ☐ Small Entity ☐ Statement filed in prior application, Statement(s) Status still proper and desired 15. ☐ The prior application is assigned of record to_____ 16. ☒ Foreign priority claimed a. ☒ Claim of Priority b. ☒ Certified Copy of Priority Document(s)
5. ☐ Incorporation By Reference (useable if Box 4b is checked) The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.	17. ☐ Other: _____ _____ _____ _____ _____
6. ☐ Microfiche Computer Program (Appendix)	_____
7. Nucleotide and/or Amino Acid Sequence Submission (if applicable, all necessary) a. ☐ Computer Readable Copy b. ☐ Paper Copy c. ☐ Statement verifying identity of above copies	_____ _____

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SPECIFICATION

Title of the Invention :

**ERROR INFORMING APPARATUS AND
ERROR INFORMING METHOD**

Inventor(s) :

**Masao AKIMOTO
Kyoji SAITO**

ERROR INFORMING APPARATUS AND ERROR INFORMING METHOD

BACKGROUND OF THE INVENTION

Field of the Invention

5   The present invention relates to an error informing apparatus and an error informing method.

Description of the Related Art

Conventionally, a functional expansion board, which has devices and software, which are necessary for

10   network communications such as a LAN interface, is added to an expansion slot, which is provided in the main body of the existing apparatus such as a facsimile apparatus, a printer, a copy machine, etc., so that a network-capable function is added to the main body of this

15   apparatus.

For example, the following case can be explained when the function of the Internet facsimile apparatus (hereinafter referred to as IFAX") as disclosed in Unexamined Japanese Patent Publication HEI No. 8-242326

20   and the corresponding USP 5,881,233 is added to the conventional facsimile apparatus (hereinafter referred to as PSTN-FAX) using the telephone line. Specifically, LAN board, which has devices such as an interface for connecting to CPU, LAN, and a memory with such a program

25   that implements each function of format converting means for converting image data to a format of e-mail, format invert converting means for converting e-mail to format

of image data (facsimile data) and e-mail receiv-
ing/transmitting means for receiving/transiting e-
mail-format image data over LAN, is added to the main
body of PSTN-FAX. Then, necessary data is exchanged
5   between CPU on the main body of the facsimile apparatus
side and CPU on the LAN board side so that IFAX
communication processing is implemented.

In this case, connection between a mail server and
IFAX cannot be sometimes established because of
10 occurrence of error on the LAN board side, or the LAN
side, or the mail server side. At this time, CPU on the
main body of IFAX displays a message, which indicates
an error, for example, "server connection fault" or a
code on a display on the main body of IFAX side so as
15 to inform an operator of occurrence of abnormity.

However, information that the operation can know
from the message is too rough to determine the reason
why the IFAX cannot connect to the mail server easily.
As the reason why the IFAX cannot connect to the mail
20 server, various reasons such as trouble of LAN board,
that of LAN, that of mail server, etc., can be considered.
Moreover, the measures against the trouble differ de-
pending on at which stage of protocol the trouble has
occurred.

25   To detect the trouble occurred in the LAN board and
notify the operator of the result specifically, the
upgrading of the program on the LAN board or the

installation of an auxiliary program can be considered.
To recognize this notification by the main body of IFAX
the facsimile apparatus and display on the display device,
there must be provided communication means between the
5   main body of the facsimile apparatus and the LAN board.
For this reason, the upgrading of the program on the main
body of the facsimile apparatus or the installation of
an auxiliary program is needed in the same manner as the
above. This results in increases in time and cost, which
10   are required for development. Moreover, this upgrading
increases an area where the program occupies in the
memory on the main body of IFAX side, causing trouble
in which an area for receiving an image is reduced.

Additionally, in the present system, the code or
15   the message, which corresponds to the trouble in the LAN
board, is divided into parts, so that specific error
information can be classified to some degree. In this
case, however, complex information, which is unnecessary
for the user, is displayed on the display device, and
20   this may confuse the user.

SUMMARY OF THE INVENTION

It is an object of the present invention is to
provide an error informing apparatus that is capable of
detecting occurrence of error of the apparatus or an
25   error over a computer network to inform an outer
apparatus of the result without using the resources of
the main body of the apparatus, and its error informing

method.

In order to achieve the above object, the present invention detects an error, which is caused in a functional expansion apparatus itself, a computer network, and an apparatus connected to the computer network, and the present invention puts information of the detected error into a Data frame of a packet, and sends it to an outer terminal. Then, the outer packet keeps watch on this packet.

The outer terminal monitors the error caused in the functional expansion apparatus and the like so as to specifically grasp a point and stage which trouble occurs in the communication. This makes it possible to implement the monitoring of error regardless of the configuration of the main body of the apparatus, and to appropriately deal with the trouble in a short time.

BRIEF DESCRIPTION OF THE DRAWINGS

The above and other objects and features of the invention will appear more fully hereinafter from a consideration of the following description taken in connection with the accompanying drawing wherein one example is illustrated by way of example, in which;

FIG. 1 is a conceptual view showing a computer network system where a facsimile apparatus, which has a LAN board, operates according to an embodiment of the present invention;

FIG. 2 is a perspective view showing an appearance of an Internet facsimile apparatus according to the above embodiment;

FIG. 3 is a block diagram showing a hardware configuration of the Internet facsimile apparatus according to the above embodiment;

FIG. 4 is a block diagram showing an IFAX function of a LAN board according to the above embodiment;

FIG. 5 is a block diagram showing an error detecting function of the LAN board according to the above embodiment;

FIG. 6 is a sequence view showing a procedure for transmitting e-mail among the main body of the facsimile apparatus, LAN board, and mail server using SMTP (Simple Mail Transport Protocol) according to the above embodiment;

FIG. 7 is a flowchart showing each step of error detection processing of LAN board according to the above embodiment;

FIG. 8 is a view showing a format of an ICMP packet; and

FIG. 9 is a view showing the configuration of programs of the main body of the facsimile apparatus and LAN board according to the above embodiment.

DETAILED DESCRIPTION OF THE
PREFERRED EMBODIMENTS

An embodiment of the present invention will now be

described specifically with reference to the drawing
accompanying herewith.

FIG. 1 is a conceptual view showing a computer
network system where a facsimile apparatus (IFAX), which
5 has a LAN board, operates according to an embodiment of
the present invention.

IFAX 1 according to this embodiment is connected to
a local area network (LAN) 2. A mail server 3 and a personal
computer (PC) 4, which are provided in the same network
10 as that of IFAX 1, are connected to LAN 2. Moreover, LAN
2 is connected to the Internet 6 via a router 5.
Furthermore, IFAX 1 is connected to PSTN 7.

This embodiment exemplifies a case in which IFAX 1
detects an error occurred in transmitting e-mail
15 according to SMTP and the detected error is recognized
by PC4 on LAN 2.

FIG. 2 is a perspective view showing an appearance
of IFAX according to the above embodiment. The following
will explain the case in which IFAX 1 is seen from the
20 direction, which is shown by an arrow C in FIG. 2. A panel
control section 11 is provided on a left side surface side,
which is an upper surface portion of a housing body 10
of IFAX 1. The panel control section 11 has a display 12
for displaying various kinds of information, and keys 13
25 for inputting an address, an instruction, and the like.

A document plate 14 for supplying an original to a
scanner is provided at the right of the panel control

section 11. Output trays 15 and 16 that receive printed
materials dropped thereto are continuously provided at
a left side surface portion of IFAX 1 in a vertical
direction. A paper feeding section 17 that feeds printed
5   materials to a printer is provided at a bottom surface
portion of IFAX 1.

FIG. 3 is a block diagram showing a hardware
configuration of the IFAX according to the above
embodiment.

10   IFAX 1 is composed of a main body 101 of IFAX and
a LAN board 102. They are connected to each other in serial
or parallel although their connection form is not limited.

In the main body 101 of IFAX, a user performs various
kinds of operations from the panel control section 11.
15   A panel CPU 103 controls mainly a signal input from this
panel control section 11. A main CPU 104 controls a signal
to be output to the LAN board 102, and also controls a
facsimile section 105 that performs communications on
dialup. The facsimile section 105 comprises a scanner,
20   a compression/decompression section and a printer.

At a transmitting time, the scanner scans an
original, and generates bitmap data. The compression/
decompression section compresses the bitmap data in a
compressed format form, for example, MH, which is used
25   in facsimile communications. While, at a receiving time,
received MH data is decompressed by the compression/
decompression section so as to obtain bitmap data, and

the bitmap data is printed by the printer.

Moreover, in the LAN board 102, CPU 106 executes a program, and controls the entirety of the LAN board 102. ROM 107 stores the program, which CPU 106 executes. RAM 108 has a work area where the program is executed and a buffer where various kinds of data such as e-mail, an image file, and the like are temporarily stored. A LAN interface 109 is an interface that executes a procedure, which is necessary for receiving and transmitting data such as e-mail over LAN 2 and Internet 6.

In IFAX 1, the scanner and printer of the facsimile section 105 are integrated into the housing body 10 of FIG. 2 together with other configuration components, that is, panel controls section 11, panel CPU 103, main CPU 104, and CPU 106, ROM 107, RAM 108, LAN interface 109, which are provided in the LAN board 102 side.

The above-configured IFAX 1 relating to this embodiment scans the original using the scanner of facsimile section 105, and obtains bitmap data. The compression/decompression section compresses the bitmap data to HM data. One MH data per one page of original is generated. The main CPU 104 transmits this MH data to the LAN board 102. The CPU 106 on the side of LAN board 102 stores MH data received to the buffer area of RAM 108.

FIG. 4 is a block diagram showing the IFAX function of LAN board according to the above-mentioned embodiment.

In the LAN board 102, MH→TIFF converting section

201 converts MH data to a TIFF file. Since one MH data per one page of original is generated, a plurality of MH data is generated when the number of pages of is two or more. At this time, MH→TIFF converting section 201

5 converts the plurality of MH data to one TIFF file. Next, a mail generating section 202 generates e-mail accompanied with a TIFF file. Namely, the TIFF file is coded to a text code, and the text-coded TIFF file data is attached to a multipart mail in accordance with, for

10 example, an MIME format. A mail transmitting section 203 transmits this e-mail to a destination in accordance with SMTP.

While, at a receiving time, when the e-mail is received by a mail receiving section 204, text-coded TIFF

15 file data attached to this e-mail is decoded to a TIFF file by a binary converting section 205. Next, a TIFF→MH converting section 206 decompresses the TIFF file to obtain MH data. The LAN board 102 transmits MH data to the main body 101 of IFAX.

20 In the main body 101 of IFAX, the compression/ decompression section of facsimile section 105 decom- presses HM data to obtain bitmap data. The bit map data is printed by the printer.

Thus, the LAN board 102 converts image data from the

25 main body 101 of IFAX to the e-mail format so that the converted data is transmitted to the destination, and/or converts received image data of e-mail format to original

image data so that the converted data is transmitted to
the main body 101 of IFAX.

FIG. 5 is a block diagram showing an error detecting
function of the LAN board according to the above
5   embodiment.

An error detecting section 301 detects an error
occurred in the mail transmitting section 203. The error
detecting section 301 instructs an error message data
generating section 302 to generate error message data when
10 detecting an error. The error message data includes a
character string, a code, and the like which are generated
in accordance with the error. The error message data
generating section 302 transmits generated error message
data to an ICMP processing section 303. The ICMP
15 processing section 303 has a function of notifying a
communication partner of information using the packet in
accordance with a protocol for management, which reports
information of a protocol state of IP layer, that is ICMP
(Internet Control Message Protocol). The ICMP processing
20 section 303 puts error message data into the Data frame
of the packet, and transmits this packet to a
predetermined destination via LAN 2.

FIG. 6 is a sequence view showing a procedure for
transmitting e-mail among the main body of IFAX, LAN
25 board, and mail server using SMTP according to the above
embodiment.

When a connection request is sent from the main body

101 of IFAX to the LAN board 102, the LAN board 102 executes a procedure for establishing connection with the mail server 3. When connection with the mail server 3 is established, the LAN board 102 responses to the main

5 body 101 of IFAX. Next, when the main body 101 of IFAX sends a transmission request to the LAN board 102, the LAN board 102 transmits a header first. Then, the LAN boarder 102 receives image data (MH data) from the main body 101 of IFAX, and converts image data to TIFF as

10 mentioned above, and transmits it to the mail server 3. After the transmission, the LAN board 102 logs off connection with the mail server 3, and ends transmission processing.

In the above-explained transmission processing,

15 the LAN board 102 detects an error, and provides notification.

FIG. 7 is a flowchart showing each step of error detection processing of the LAN board according to the above embodiment.

20 In step (hereinafter referred to as ST) 701, the mail transmitting section 203 of LAN board 102 sends a command (for example, HELLO, MAIL, RCPT, DATA, QUIT, and the like) to the mail server 3.

In ST702, the error detecting section 301 determines

25 whether or not the mal server 3 has sent a response. If there is no response, the error detecting section 301 determines whether or not a predetermined period of time

has passed. If the predetermined period of time has not passed, the operation goes back to ST702 and the error detecting section 301 determines whether or not the mail server 3 has sent a response. In this way, the error detecting section 301 waits for the response from the mail server 3.

If there is the response from the mail server 3 in ST702, the error detecting section 301 determines whether or not a response code of the response adapts to the command. For example, if the LAN board 102 and mail server 3 are connected to each other using TCP, the mail server 3 sends a response with a command of "220." Therefore, if the response is "220", the error detecting section 301 determines that the response code is adaptable. Similarly, if "250" to HELLO command, "250" to MAIL command, "250" to RCPT command, "354" to DATA command, and "221" to QUIT command are respectively sent to the error detecting section 301 as a response, the error detecting section 301 determines that each response code is adaptable. Then, when the response code is adaptable, an operation moves to transmission of a next command.

If the predetermined period of time has passed in ST703 or the response code is not adaptable in ST704, the error message data generating section 302 generates error message data corresponding to the command in ST705. In this case, error message data is generated such that an error-generated stage can be understood.

Next, in ST706, the ICMP processing section 303 generates a packet of ICMP including error message data, and sends it onto LAN 2. The format of ICMP packet is shown in FIG. 8. This ICMP packet 401 is composed of the

5 respective frames of Type 402, Code 403, Checksum 404, Identifier 405, Sequence Number 406, and Data 407. Error message data is put into Data frame 407.

In this example, the type of packet is "Echo request" that requests echo back transmission of IP packet from

10 the destination, and that is executed by a command, which is so-called PING. This ICMP packet 401 is transmitted to the fixed destination address. In this example, the destination address is set to the router 5, which is connected to LAN 2. After the ICMP processing section 303

15 thus transmits ICMP packet 401, processing is ended.

When the router 5 receives the ICMP packet 401 transmitted to LAN 2 from the ICMP processing section 303, data including Identifier frame 403 and afterward is directly replied as "Echo reply." Error message data is

20 directly included in the Data frame 407. This replied "Echo reply" is ignored by the LAN board 102.

Next, error message data will be specifically explained. A plurality of programs A to D shown in FIG. 9 is executed, and each processing such as communications

25 and the like is carried out. Here, for example, it is assumed that a name of program, which waits for the detection of a response signal in ST702 to ST703 of FIG.

7 and its row number are set to Data frame 407 of packet 401. PC 4 captures and analyzes them, so that the name of program and its row number can be grasped. This allows efficiency of debug to be improved.

5   The program name and its row number are those that are extracted when the program is generated and compiled. They are set every program.

In this case, error message data other than the name of program and the row number may be used, and for example,

10   a character string, which shows an error name, may be used.

As mentioned above, when the LAN board 102 detects the error, the LAN board 102 generates error message data corresponding to this error and transmits the packet including the error message data onto LAN 2. Then, a LAN

15   analyzer, which operates on PC 4, monitors the packet flowing on LAN 2. The analyzer is an application that has functions, which captures the packet from LAN 2, stores the packet to a buffer memory or a hard disk, and which analyzes the packet to display. It is possible to use the

20   LAN analyzer, which is currently on the market. When the LAN analyzer captures the ICMP packet transmitted from the LAN board 102 and displays it, it is possible to see error message data, which is included in the Data frame 407. A person, who is in charge of maintenance, views the

25   analytical result of packet 401. This makes it possible to easily grasp at which stage trouble has occurred, and to obtain measures against the problem rapidly. More

specifically, if no response signal is sent from the mail server 3 or a signal, which is different from one expected, is sent, there is a high possibility that a bug will be present in the program of mail transmitting section 203.

5   Then, the program must be debugged. According to this embodiment, since it is possible to easily grasp at which stage the error has occurred, debugging time can be largely reduced.

As mentioned above, the LAN board 102 relating to
10   this embodiment detects the error generated in the LAN board 102 itself, LAN 2, and mail server 3 (hereinafter referred to as LAN board side) regardless of the configuration of the main body 101, and informs the outer apparatus of the detected result. This eliminates the
15   need for providing any addition and change to the hardware of the main body 101 of IFAX and the software. Therefore, it is possible to reduce time and cost, which are required for development of IFAX 1. Also, this makes it possible to prevent the increase in an area where the program
20   occupies in the memory on the main body 101 of IFAX and the reduction in an area for receiving an image.

Additionally, as explained in the above embodiment, it is monitored whether or not the transmission of command and the response are normally performed at each stage of
25   the procedure, which is carried out between the LAN board 102 and mail server 3. When abnormality occurs, notification of specific error message can be sent, and

this makes it possible to obtain more detailed information from the LAN board 102.

Moreover, the LAN board 102 relating to the above embodiment adds error message data to the packet such as

5   ICMP packet, transmits this packet onto LAN 2, and monitors this packet using the LAN analyzer of PC 4. This establishes a communication line between the LAN board 102 and PC 4, so that the amount of processing is smaller than the case in which error information is transferred

10   to PC 4 from the LAN board 102, and little influence of LAN 2 is exerted thereon. As a result, stable error monitoring can be carried out. Further, there is no need to install an application, which is dedicated to communications with the LAN board 102, to PC 4.

15   Moreover, since the LAN board 102 relating to this embodiment uses the existing protocol such as Echo Request of ICMP, it is possible to provide notification of error with high reliability and high safety. In addition, since ICMP is extremely simple, there is an advantage in

20   which trouble is not easily generated. Furthermore, since the LAN analyzer, which is on the market, can be used, the application dedicated to PC is not necessarily developed.

The above embodiment exemplified the case of mail

25   transmission using SMTP. The present invention is not limited to this case. The present invention can be applied to error detection at a mail receiving time. Moreover,

the present invention can be applied to error detection
and notification using other mail transfer protocols such
as POP3, IMAP4, and data transfer protocols such as FTP,
HTTP.

5   Additionally, the packet of "Echo Replay", which is
replied to the LAN board 102 from the router 5, may be
captured and analyzed by the LAN analyzer of PC 4 since
the error message data is included in Data frame 407.

Further, the destination of ICMP packet 401 may be
10   PC 4, which can receive "Echo Request" and store the
content, and a workstation (WS) in place of router 5. In
this case, it is possible for PC4 or WS to store and confirm
an error log.

The present invention is not limited to the
15   above-mentioned embodiment, and various modifications
can be made without departing from the sprit and scope
of the invention. For example, the present invention can
be applied to a network expansion card, which provides
a data communication function via LAN to IFAX, a copy
20   machine, a printer, a multiple apparatus, and the like
via LAN. In this case, the network expansion card has
at least an LAN interface. Then, the error is detected
by this card, and error information is put to the packet,
and transmitted onto LAN. In other words, the present
25   invention includes a functional expansion apparatus,
which has at least an interface for connecting to the
commuter network, and which expands the communication

function with respect to the main body of the apparatus.

The above embodiment explained the case in which LAN card 102 was internally connected to the main body 101 of IFAX. However, the present invention is not limited

5   to such functional expansion board. For example, the present invention includes a functional expansion apparatus (functional expansion adapter), which is externally connected to the electronic equipment, as in IFAX adapter, which is externally connected to the main body

10   of IFAX. An error informing apparatus, which has no configuration for functional expansion, is included in the scope of the present invention.

The invention may be conveniently implemented using a conventional general purpose digital computer or

15   microprocessor according to teachings of the present specification, as will be apparent to those skilled in the computer art. Appropriate software coding can readily be prepared by skilled programmers based on the teachings of the pr3sent disclosure, as will be apparent to those

20   skilled in software art. The invention may also be implemented by the preparation of application specific integrated circuits or by interconnecting an appropriate network of conventional component circuits, as will be readily apparent to those skilled in the art.

25   The present invention includes a computer program product which is a storage medium including instructions which can be used to program a computer to perform a

process of the invention. The storage medium can include, but is not limited to, any type of disk including floppy disks, optical discs, CD-ROMs, and magneto-optical disks, ROMs, RAMs, EPROMs, EEPROMs, magnetic or optical cards,

5   or any type of media suitable for storing electronic instructions.

According to the present invention, it is possible to grasp detailed information of error, for example, in which module an error has occurred, by what sequence the

10   error has been generated, to what extent processing has progressed at the error generating time, and how the internal state has been set. Additionally, it is possible to grasp such detailed information of error from the external apparatus without using the resources (memory,

15   program, new communication means, and the like) of the main body of the apparatus.

The present invention is not limited to the above described embodiments, and various variations and modifications may be possible without departing from the

20   scope of the present invention.

This application is based on the Japanese Patent Application No.HEI11-352035 filed on December 10, 1999, entire content of which is expressly incorporated by reference herein.

25

What is claimed is:

1. An error informing apparatus comprising:

an interface, which connects to a computer network;

communication means for performing communications via said computer network;

error detecting means for detecting an error occurred in said communications; and

error informing means, when said error is detected by said error detecting means, for putting information of said error into a packet to be transmitted onto said computer network.

2. An error informing apparatus comprising:

format converting means for converting image data to a format of e-mail;

e-mail transmitting means for transmitting image data, which is converted to said format of e-mail, to a destination via a computer network;

error detecting means for detecting an error of said e-mail generated when transmitting said e-mail; and

error informing means, when said error is detected by said error detecting means, for putting information of said error into a packet to be transmitted onto said computer network.

3. An error informing apparatus comprising:

e-mail receiving means for receiving image data, which is converted to a format of e-mail, via a computer network;

format converting means for converting received e-

mail to original image data;

error detecting means for detecting an error generated when receiving said e-mail; and

error informing means, when said error is detected by said error detecting means, for putting information of said error into a packet to be transmitted onto said computer network.

4. The error informing apparatus described in claim 1, wherein said packet is an ICMP packet.

5. The error informing apparatus described in claim 1, wherein information of error is a name of a program where the error has generated and a row number.

6. An electronic apparatus having the error informing apparatus described in claim 1.

7. An error informing method comprising the steps of:

performing communications via a computer network;

detecting an error occurred in said communications; and

putting information of said error into a packet to be transmitted onto said computer network when said error is detected.

8. An error informing method comprising the steps of:

converting image data to a format of e-mail;

transmitting image data, which is converted to said format of e-mail, to a destination via a computer network;

detecting an error of said e-mail generated when transmitting said e-mail; and

putting information of said error into a packet to be transmitted onto said computer network when said error is detected.

9. An error informing method comprising the steps of:

5   receiving image data, which is converted to a format of e-mail, via a computer network;

converting received e-mail to original image data;

detecting an error generated when receiving said e-mail; and

10   putting information of said error into a packet to be transmitted onto said computer network when said error is detected.

ABSTRACT OF THE DISCLOSURE

An error detecting section detects an error caused
in a mail transmitting section. The error detecting
5   section instructs an error message data generating
section to generate an error message data when detecting
the error. The error message data includes a character
string generated to correspond to the error, and a code.
The error message data generating section transmits
10   generated error message data to an ICMP processing section.
The ICMP processing section has a function of notifying
a communication partner of information using a packet in
accordance with a protocol for management, which reports
information of a protocol state of IP layer, that is ICMP
15   (Internet Control Message Protocol). The ICMP processing
section puts error message data into a Data frame of the
packet, and transmits this packet to a predetermined
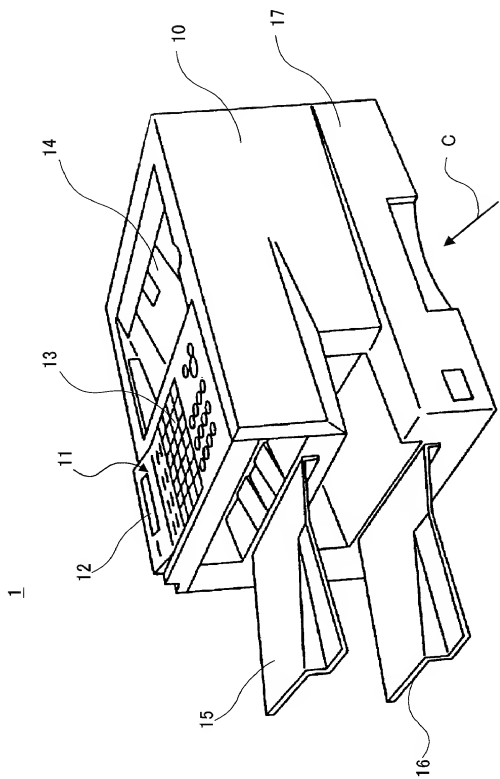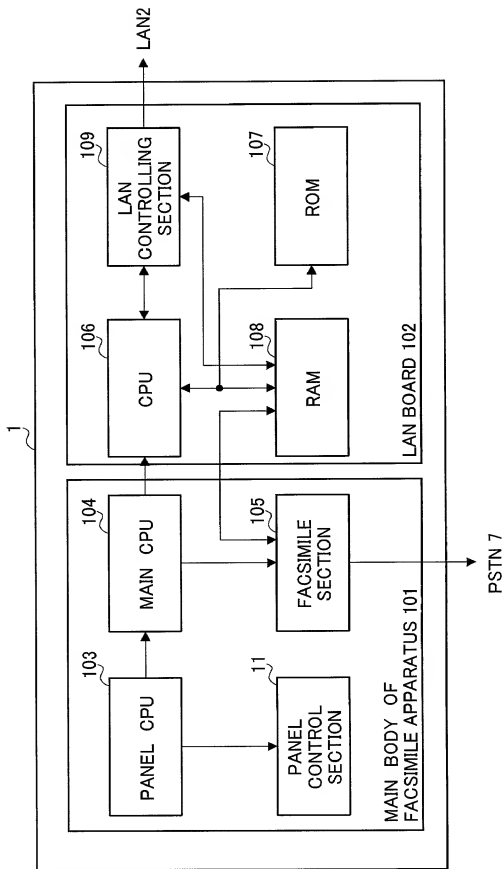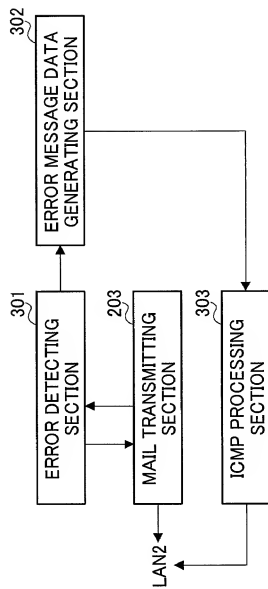destination via LAN.

FIG.1

FIG.2

FIG.3

FORMAT CONVERSION →

RAM 108

| MAIN BODY OF FACSIMILE | → | MH DATA | → | MH→TIFF CONVERTING SECTION 201 | → | MAIL GENERATING SECTION 202 | → | MAIL TRANSMITTING SECTION 203 | → | LAN2 |

| MAIN BODY OF FACSIMILE | ← | TIFF→MH CONVERTING SECTION 206 | ← | BINARY CONVERTING SECTION 205 | ← | MAIL RECEIVING SECTION 204 | ← | LAN2 |

FORMAT INVERSE CONVERSION →

FIG.4

FIG.5

FIG.6

FIG.7

TYPE	CODE	CHECKSUM	IDENTIFIER	SEQUENCE NUMBER	DATA
402	403	404	405	406	407

401
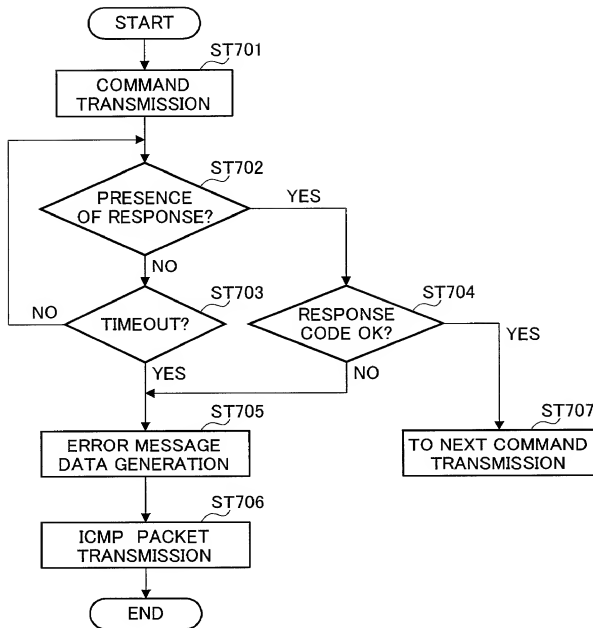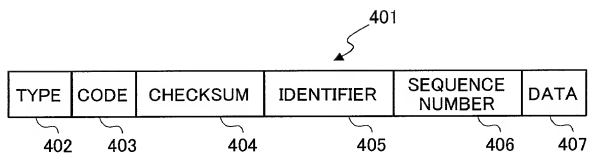
FIG.8

1000 ≀ 1990	PROGRAM A
2000 ≀ 2990	PROGRAM B
3000 ≀ 3990	PROGRAM C
4000 ≀ 4990	PROGRAM D

FIG.9

Declaration and Power of Attorney For Utility or Design Patent Application

特許出願宣言書

Japanese Language Declaration

私は、下欄に氏名を記載した発明者として、以下のとおり宣言する:

As a below named inventor, I hereby declare that:

私の住所、郵便の宛先および国籍は、下欄に氏名に続いて記載したとおりであり、

My residence, post office address and citizenship are as stated below next to my name.

名称の発明に関し、請求の範囲に記載した特許を求める主題の本来の、最初にして唯一の発明者である(一人の氏名のみが下欄に記載されている場合)か、もしくは本来の、最初にして共同の発明者である(複数の氏名が下欄に記載されている場合)と信じ、

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

_____

_____

_____

ERROR INFORMING APPARATUS AND

ERROR INFORMING METHOD

上記発明の明細書(下記の欄でX印がついていない場合は、最初に添付)は、

the specification of which is attached hereto unless the following box is checked:

☐ ・ _____年_____月_____日に提出され、

☐ was filed on_____as

米国出願番号 _____ とし、

United States Application Number _____

(該当する場合)_____年_____月_____日に訂正されました。又は、

and was amended on _____ (if applicable) or,

特許協定条約国際出願番号 _____ とし、

PCT International Application Number _____

(該当する場合)_____年_____月_____日に訂正されました。

and was amended on _____(if applicable)

私は、前期のとおり補正した請求の範囲を含む前記明細書の内容を検討し、理解したことを陳述する。

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

私は、連邦規則法典第37編第1条第56項定義されるとおり、特許資格の有無について重要な情報を開示すべき義務をあることを認めます。

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56.

私は合衆国法典第35部第119条(a-d)項又は第365条(b)項に基づく、下記の外国特許出願又は発明者証出願、或いは第365条(a)項に基づく、少なくとも米国以外の1ヶ国を指名したPCT国際出願の外国優先権を主張し、更に優先権の主張に係わる基礎出願の出願日前の出願日を有する外国特許出願、又は発明者証出願或いはPCT国際出願を以下に"なし"の箱に印をつけることにより明記する:

I hereby claim foreign priority under Title 35, United States Code §119(a-d) or §365(b) of any foreign application(s) for patent or inventor's certificate, or §365(a) of any PCT international application which designated at least one country other than the United States, listed below. I have also identified below, by checking the "No" box, any foreign application for patent or inventor's certificate, or of any PCT international application having a filing date before that of the application on which priority is claimed:

Prior foreign applications 先の外国出願			Priority claimed 優先権の主張	
JP 11-352035	JAPAN	10/December/1999	■	☐
(Number) (番号)	(Country) (国名)	(Day/Month/Year Filed) (出願の年月日)	Yes あり	No なし
_____	_____	_____	☐	☐
(Number) (番号)	(Country) (国名)	(Day/Month/Year Filed) (出願の年月日)	Yes あり	No なし
_____	_____	_____	☐	☐
(Number) (番号)	(Country) (国名)	(Day/Month/Year Filed) (出願の年月日)	Yes あり	No なし

☐ その他の外国特許出願番号は別紙の追補優先権欄にて記載する。

☐ Additional foreign application numbers are listed on a supplemental priority sheet attached hereto.

Japanese Language Utility or Design Patent Application Declaration

私は、合衆国法典第35部第119条(e)項に基づく、下記の合衆国仮特許出願の利益を主張する。

I hereby claim the benefit under Title 35, United States Code §119(e) of any United States provisional application(s) listed below.

(Application Number) (番号)	(Day/Month/Year Filed) 出願の年月 日
(Application Number) (番号)	(Day/Month/Year Filed) 出願の年月 日
(Application Number) (番号)	(Day/Month/Year Filed) 出願の年月 日

☐ その他の合衆国仮特許出願番号は別紙の追補優先権欄にて記載する。

☐ Additional provisional application numbers are listed on a supplemental priority sheet attached hereto.

私は、合衆国法典第35部第120条に基づく下記の合衆国特許出願、又は第365条(c)項に基づく合衆国を指名したPCT国際出願の利益を主張し、本願の請求の範囲の各項に記載の主題が合衆国法典第35部第112条第1項規定の態様で、先の合衆国特許出願又はPCT国際出願に開示されていない限度において、先の出願の出願日と本願の国内出願日又はPCT国際出願日の間に有効となった連邦規則法典第37部第1章第56条に記載の特許要件に所要の情報を開示すべき義務を有することを認める。

I hereby claim the benefit under Title 35, United States Code §120 of any United States application(s), or §365(c) of any PCT international application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT international application in the manner provided by the first paragraph of Title 35, United States Code §112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations §1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

(Application No.) (出願番号)	(Day/Month/Year Filed) (出願の年月 日)	(現況) (特許済み、係属中、放棄済み)	(Status) (patented, pending, abandoned)
(Application No.) (出願番号)	(Day/Month/Year Filed) (出願の年月 日)	(現況) (特許済み、係属中、放棄済み)	(Status) (patented, pending, abandoned)

☐ その他の合衆国又は国際特許出願番号は別紙の追補優先権欄にて記載する。

☐ Additional U. S. or international application numbers are listed on a supplemental priority sheet attached hereto.

私は、ここに自己の知識にもとづいて行った陳述がすべて真実であり、自己の有する情報および信ずるところに従って行った陳述が真実であると信じ、さらに故意に虚偽の陳述等を行った場合、合衆国法典第18部第1001条により、罰金もしくは禁錮に処せられるか、またはこれらの刑が併科され、またかかる故意による虚偽による陳述が本願ないし本願に対して付与される特許の有効性を損なうことがあることを認識して、以下の陳述を行ったことを宣言する。

私、下記署名者は、ここに記載の米国弁護士または代理人に本出願に関し特許商標庁にて取られるいかなる行為に関して、同米国弁護士又は代理人が、私に直接連絡なしに私の外国弁護士或るいは法人代表者からの指示を受け取り、それに従うようにここに委任する。この指示を出す者が変更の場合には、ここに記載の米国弁護士又は代理人にその旨通知される。

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

The undersigned hereby authorizes the U.S. attorney or agent named herein to accept and follow instructions from either his foreign patent agent or corporate representative, if any, as to any action to be taken in the Patent and Trademark Office regarding this application without direct communication between the U.S. attorney or agent and the undersigned. In the event of a change in the persons from whom instructions may be taken, the U.S. attorney or agent named herein will be so notified by the undersigned.

Japanese Language Utility or Design Patent Application Declaration

委任状： 私は、下記発明者として、下記に明記された顧客番号を伴う以下の弁護士又は、代理人をここに選任し、本順の手続きを遂行すること並びにこれに関する一切の行為を特許商標庁に対して行うことを委任する。そして全ての通信はこの顧客番号宛に発送される。

POWER OF ATTORNEY: As a named inventor, I hereby appoint the attorney(s) and/or agent(s) associated with the Customer Number provided below to prosecute this application and transact all business in the Patent and Trademark Office connected therewith, and direct that all correspondence be addressed to that Customer Number:

顧客番号 7055

現在選任された弁護士は下記の通りである。

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同第二共同発明者の署名　　　　　日付	Second Inventor's signature　　　Date *Kyoji Saito*　*July 17, 2000*
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（第三またはそれ以降の共同発明者に対しても同様な情報および署名を提供すること。）	(Supply similar information and signature for third and subsequent joint inventors.)